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The following abbreviations identify organizations that are cited in the text of this report.

AWMS	Agricultural Water Management Subcommittee, Interagency Technical Advisory Committee
CDFA	California Department of Food and Agriculture
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
DWR	California Department of Water Resources
IDP	Interagency Drainage Program
NRC	National Research Council
RMI	Resources Management International, Inc.
SJVDP	San Joaquin Valley Drainage Program
SWRCB	State Water Resources Control Board
UCCC	University of California Committee of Consultants on Drainage Water Reduction
USBR	U.S. Bureau of Reclamation
USEPA	U.S. Environmental Protection Agency

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No. 17 – June 1990

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July 23–27, 1990 (Sacramento, San Francisco, Los Banos, Fresno, and Bakersfield).

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March 5, 1987 – Stockton
April 10, 1987 – Santa Nella
May 22, 1987 – Pleasanton
June 22, 1987 – Patterson
July 27, 1987 – Livermore
September 28–29 1987 – Coalinga
January 11, 1988 – Oakland
February 11, 1988 – Santa Nella
March 28,, 1988 – Tracy
April 25, 1988 – Livermore
May 23, 1988 – Stockton
June 28, 1988 – Coalinga
August 29, 1988 – Stockton
September 26, 1988 – Stockton
February 13, 1989 – Stockton
April 3, 1989 – Stockton
April 3, 1989 – Stockton
July 31, 1989 – Byron
September 11, 1989 – Stockton
November 13, 1989 – Los Banos
January 17, 1990 – Sausalito
April 18, 1990 – Coalinga
May 30, 1990 – Stockton
July 16, 1990 – Stockton
August 13, 1990 – Stockton

POLICY AND MANAGEMENT COMMITTEE MEETING MINUTES

1985

August 19
October 21
November 12
November 25
December 9
December 16

1986

January 8
January 21
February 13
March 6
April 2
April 29
May 26
June 26
August 28
October 8
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1987

February 23
April 2
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October 21

1988

January 4
March 11
May 9
May 23
December 5

1989

March 24
July 7
December 18
August 1

1990

May 7
June 13
August 15
September 22

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ABBREVIATIONS

Ac: acre

Acre-ft: acre-feet

AF: acre-feet

CCC: Commodity Credit Corporation

CSWRCB: California State Water Resources Control Board

CVP: Central Valley Project

CVRWQCB: California Regional Water Quality Control Board, Central Valley Region

DFG: California Department of Fish and Game

DWR: California Department of Water Resources

EC: electrical conductivity

EPA: U.S. Environmental Protection Agency

EPOC AG: EPOC Agricultural Corporation

gpm: gallons per minute

GW: ground water

ITAC: Interagency Technical Advisory Committee, San Joaquin Valley Drainage Program

k: thousand

mgd: million gallons per day

NWR: National Wildlife Refuge

ppb: parts per billion

ppm: parts per million

SJVDP: San Joaquin Valley Drainage Program (1984–1990)

SWP: State Water Project

SWRCB: California State Water Resources Control Board

TDS: total dissolved solids

UC: University of California

USBR: U.S. Bureau of Reclamation

USFWS: U.S. Fish and Wildlife Service

USGS: U.S. Geological Survey

WA: wildlife area managed by the State of California

yd^3: cubic yards

$>$: greater than

$\geq$: greater than or equal to

$<$: less than

$\leq$: less than or equal to

GLOSSARY

Acre-foot: The quantity of water required to cover 1 acre to a depth of 1 foot. Equal to 325,851 gallons or 43,560 cubic feet.

Adsorption: The surface retention of solid, liquid, or gas molecules, ions, or atoms by a solid or liquid.

Aerobic: Referring to a condition requiring the presence of oxygen. Aerobic bacteria require free oxygen for the metabolic breakdown of materials.

Agroforestry: As used in this report, it is the practice of growing certain types of trees with drainage water. The trees act to dispose of applied drainage and shallow ground water through foliar evapotranspiration and at the same time produce a marketable commodity.

Alluvium: A general term for clay, silt, sand, gravel, or similar unconsolidated material deposited during comparatively recent geologic time by a body of running water.

Alluvial fan: A low, outspread, relatively flat to gently sloping mass of stream deposits, shaped like an open fan or a segment of a cone deposited by a stream, especially in a semiarid region at the place where it issues from a narrow mountain valley upon a plain or broad valley.

Anaerobic: Referring to the condition of existing in the absence of oxygen. Anaerobic bacteria can survive in the partial or complete absence of air.

Aquaculture: As used in this report, refers to the potential use of drainage water for growth of aquatic organisms (fish, etc.) that could have product marketability.

Aquifer: An underground geologic formation that stores and transmits water and yields significant quantities of water to wells and springs.

Attenuation: In the context of this report, refers to the reduction of the amount of metal species transmitted through a soil column. Research has been conducted on the attenuation of selenium.

Basin trough: A long, sediment-filled depression at the center of the valley.

Bioaccumulation: The uptake and accumulation of a chemical by plants and animals directly from the environment (that is, from water, sediment, soil, or air) or through the diet. See **Bioconcentration** and **Biomagnification**.

Bioconcentration: The uptake and accumulation of a chemical by plants and animals directly from the environment, resulting in whole-body concentrations greater than those found in the environment. See **Bioaccumulation** and **Biomagnification**.

Biomagnification: The uptake and accumulation of a chemical by plants and animals through their diet, resulting in whole-body concentrations that increase at successively higher trophic levels of the food chain. See **Bioaccumulation** and **Bioconcentration**.

Biomass: As used in this report, refers to plant material that has been grown in drainage water and is suitable for use as a fuel, such as in cogeneration processes.

Cogeneration: A process using waste heat from the thermal generation of energy to evaporate drainage water.

Confined aquifer: An aquifer bounded above and below by impermeable beds or beds of distinctly lower permeability than the aquifer itself.

Conjunctive use: A resource use or management plan in which surface and ground water supplies are used in a manner to maximize use from both without degradation of either.

Contamination: The addition to a given medium, such as water, of substances that adversely affect its beneficial use.

Critical year: A year is classified as critical when unimpaired runoff to the San Joaquin River and key tributaries, as described in Department of Water Resources' Bulletin 120, is less than 3.37 million acre-feet. However, if the previous year was classified as critical, a year is rated as critical when unimpaired runoff is less than 4.13 million acre-feet.

Deep percolation: The downward percolation of water past the lower limit of the root zone of plants, usually more than 5 feet below the surface.

Delta: A low, nearly flat alluvial tract of land formed by deposits at or near the mouth of a river. In this report, Delta usually refers to the delta formed by the Sacramento and San Joaquin Rivers.

Drainage problem area: A land area characterized by waterlogging and related water-quality problems. Includes land areas now drained or land areas that likely will require drainage.

Drainage water: See **Subsurface drainage water.**

Endangered species: Any species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion of, its range.

Electrical conductivity (EC): The ability of a particular parcel of water to conduct electricity. The EC of a water sample is an indirect measure of the total dissolved solids (TDS) or salinity of the sample. Units of reporting are siemens, which are equivalent to the older units, *mhos*. Microsiemens per centimeter are abbreviated as μS/cm.

Evaporation: The change of a substance from the solid or liquid phase to the gaseous (vapor) phase.

Evapotranspiration: Water lost as vapor through the combined processes of evaporation from soil surface and transpiration from plants.

Facultative bacteria: Microorganisms capable of adaptive response to varying environments (for example, adaptive to aerobic or anaerobic conditions).

Furrow: A long, narrow, shallow trench made in the ground by a plow or other implement.

Halophytes: Plants that are well adapted to growing in a saline soil environment.

Hydraulic connections: The situation existing between two aquifers whereby the openings allow water to go from one aquifer to the other.

Immobilization: In the context of this report, the application of processes and procedures to retain toxic elements, especially selenium, in a given (soil) area. This is done to limit the movement and availability of those metal species which may make them environmental hazards.

Ion exchange: A reversible chemical reaction between a solid (ion exchanger) and a fluid (usually a water solution), by means of which ions may be interchanged from one substance to another.

Irrigation efficiency: The ratio of the average depth of water infiltrated and stored in the root zone to the average depth of water applied to the field. Application efficiency of an irrigation system is estimated by dividing the crop water use between irrigations by the amount of water applied during the last irrigation.

Leaching: The dissolution and flushing of salts from the soils by the downward percolation of water.

Methylation: The chemical attachment of one or more methyl (CH_3) groups to an element or compound.

Mitigation: One or all of the following: (a) Avoiding an impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of an action and its implementation; (c) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action; and (e) compensating for an impact by replacing or providing substitute resources or environments.

Oxidation: A chemical reaction taking place by loss of electrons or addition of oxygen.

Oxidation state: In chemical terms, it is the number of electrons that can be added or subtracted from a chemical atom in a combined state to convert it to elemental form. Also known as the oxidation number or valence and could be positive or negative.

Part per billion (ppb): One part by weight per 1 billion (10^9) parts. In water, nearly equivalent to 1 microgram per liter (µg/L), or 1 microgram per kilogram (µg/kg) in solids.

Part per million (ppm): One part by weight per 1 million (10^6) parts. In water, nearly equivalent to 1 milligram per liter (mg/L), or 1 milligram per kilogram (mg/kg), also 1 microgram per gram (µg/g).

Percolation: In the context of this report, the downward movement of water through the soil or alluvium to the ground-water table.

Potential problem water: Shallow ground water within 5 feet of the surface of irrigated lands during at least part of the year that has chemical characteristics adversely affecting agriculture and, if the water were to be drained, fish and wildlife, public health, or attainment of State surface-water quality objectives.

Principal study area: Primarily the western side of the San Joaquin Valley, comprising lands, waters, and related resources currently affected by problems related to agricultural drainage, as well as lands likely to be affected in the future.

Problem water: That part of potential problem water that, because of its adverse impact on crops, soils, or off-site areas, and water and land uses, requires drainage and associated management.

Recharge: The processes of water filling the voids in an aquifer, which causes the piezometric head or water table to rise in elevation.

Reduction: A chemical reaction taking place by acceptance of electrons, removal of oxygen, or addition of hydrogen.

Riparian: Pertaining to the banks and other terrestrial environs adjacent to water bodies, watercourses, and surface-emergent aquifers (for example, springs, seeps, and oases), whose waters provide soil moisture significantly in excess of that otherwise available through local precipitation. Vegetation typical of this environment depends on the availability of excess water.

Root-zone storage: Water present in the first few feet, usually within 5 feet of the ground surface in field crops and vegetables; within 10 feet for some fruit and nut trees.

Salinity: The salt content of dissolved mineral salts in water or soil. Salinity in water is measured by determining the amount of total dissolved solids (TDS) or by the electrical conductivity (EC); 1,000 µS/cm is approximately equal to 650 ppm as TDS.

Salts: In chemistry, the compound formed when the hydrogen of an acid is replaced by a metal or its equivalent. Examples are sodium chloride, calcium sulfate, and magnesium carbonate. In this report, it generally refers to chemical salts as they are dissolved in water or present in soils. The major components of drainage water salts are sodium, sulfate, and chloride.

Salt balance: The equilibrium established between salts imported to an area and the salts exported from the same area. When used in a regional sense, imported salts are those contained in surface-applied water and may include other inputs such as fertilizer, soil amendments, and precipitation; exported salts are those conveyed from the area through surface and subsurface flows. The term "salt balance" can also be applied to the crop root zone. In this sense, it refers to an equilibrium state of soil salinity where there is no net salt accumulation in the root zone. Net accumulation of salt in the crop root zone can reduce crop yields.

Salt load: The total amount of salts contained in a given volume of water entering or leaving an area.

Seepage: Water escaping from a channel or an impoundment by percolation.

Selenate: Ionized selenium, usually present as a salt, existing in a valence (or oxidation) state of +6. The chemical symbol is SeO_4^{-2}.

Selenite: Ionized selenium, usually present as a salt, existing in a valence (or oxidation) state of +4. The chemical symbol is SeO_3^{-2}.

Semiconfined aquifer: As used in this report, it includes all aquifers above the Corcoran Clay, including the so-called unconfined aquifer.

Shallow ground water: Ground water within 20 feet of the land surface.

Sierran sand: A term referring to a distinct subsurface body of water-bearing material underlying the San Joaquin Valley. These deposits originated from the Sierra Nevada. Term is equivalent to "Sierran sediment" and "Sierra Nevada sediment."

Soil salinization: The accumulation of soluble salts in the soil by the evaporation of water from the soil zone.

Solar ponds: Nonconvective, salt-gradient solar ponds discussed in this report are about 6.5 to 16.5 feet deep with three distinct water salinity/density zones. Short-wave solar radiation penetrates the upper zones into the lower, denser, heat storage zone and raises its temperature. The stored heat can be used as a low-temperature energy source.

Subsidence: A local mass movement that involves principally the gradual downward settling or sinking of the earth's surface with little or no horizontal motion. It may be due to natural geologic processes or mass activity such as removal of subsurface solids, liquids, or gases, and wetting of some types of moisture-deficient loose or porous deposits.

Substance of concern: One of a group of toxic or potentially toxic chemical elements or constituents present in agricultural drainage water.

Substitute water supply: An adequate nontoxic and reliable freshwater supply equal in volume to the agricultural drainage water previously used by wildlife and/or wildlife habitat. In practical application, it is water to replace a supply on which biological dependence has developed.

Subsurface drainage water: Surplus water removed from within the soil by natural or artificial means, such as by drains placed below the surface to lower the water table below the root zone. In this report, unless otherwise qualified, drainage water refers to subsurface drainage water.

Tailwater: Irrigation water that flows over an irrigated field without infiltrating the soil. Synonymous with "surface drainage water" and "irrigation return flow."

Tile drain: An on-farm subsurface drain made of flexible plastic pipe (formerly made of clay tile).

Total dissolved solids: A measure of the amount of dissolved material in a liquid (usually water). It is used to determine salinity. The procedure requires measuring (weighing) the amount of solid remaining after evaporation of the liquid for a given time period and at a specified temperature.

Trace elements: Those elements present in the environment at small but measurable concentrations, usually less than 1 part per million.

Transpiration: The passage of water through the stomata of plant leaves into the atmosphere.

Upland: Generally means a land zone sufficiently above and/or away from freshwater bodies, watercourses, and surface-emergent aquifers to be largely dependent on precipitation for its water supplies. As used in this report, *upland* also refers to lands other than those which are seasonally or permanently wet.

Volatilization: The conversion of a chemical substance from a liquid or solid state to the gaseous (vapor) state.

Waterlogged: Soaked or saturated; said of an area affected by a high water table; that is, where water stands near, at, or above the land surface.

Water table: The area in unconfined subsurface material where hydrostatic pressure equals atmospheric pressure. Generally, the boundary between the saturated and unsaturated subsurface soil zones.

Wetland: A zone periodically or continuously submerged or having high soil moisture, which has aquatic and/or riparian vegetation components, and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

Wildlife habitat: An area that provides a water supply and vegetative habitat for wildlife.

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DEPARTMENT OF WATER RESOURCES

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